WELCOME TO THE AGE OF THE CONNECTED AIRCRAFT
The Connected Aircraft

Honeywell is changing the way people communicate on and with an aircraft today and in the future — making the business of flying safer, more productive, and more entertaining.

Introduction

Connectivity, already transforming the world we live in, is revolutionizing the aerospace industry. The incredible amount of data generated inflight is changing the way an airplane operates, from takeoff to landing to maintenance, making it smarter and more efficient.

This revolution brings immense opportunity to increase an aircraft’s flight efficiency, productivity and availability as well as reduce its operating cost, all while delivering a more comfortable, enjoyable, and safer experience for passengers.

Why Honeywell?

Honeywell has taken the lead in delivering high-speed Wi-Fi in the skies. Through acquisition and in-house expertise, no other company can match our extensive product portfolio, install base and “satellite to services, airtime to apps” offerings. We are differentiated by our breadth and depth of technologies, our expertise in avionics, mechanical components, and propulsion systems coupled with our leading position in satellite communications. This means we are uniquely placed to deliver and leverage the Connected Aircraft.

Safety and security are paramount at Honeywell; they are at the center of all we do. More than half of Honeywell’s 22,000 engineers worldwide work on software, and cybersecurity is a key part of our software development process. Whether it’s the avionics systems providing critical communications links to the ground or reliable mechanical systems that ensure an aircraft arrives safely at its destination, Honeywell is there to provide the tools and technology operators need.

Building upon this legacy of excellence, and leveraging our position in the Connected Aircraft market, Honeywell is protecting the virtual world as well, securing the large caches of data coming on and off the aircraft. Further, Honeywell is enhancing our efforts by developing a Cybersecurity Center of Excellence designed to support our customer’s Connected Aircraft needs.

Honeywell is changing the way people communicate on and with an aircraft today and in the future — making the business of flying safer, more productive, and more entertaining.
Benefits: Flight Operations and Fleet Managers

The Connected Aircraft revolutionizes flight operations – dramatically improving aircraft turnaround time. Access to real-time information enables flight and fleet operations to translate aircraft data into actionable metrics to improve efficiency and save money.

Flight Operations Solutions

Honeywell’s apps for electronic flight bags, such as GoDirect Weather and GoDirect Flight Optimization, assists the flight crew in making strategic, in-flight decisions with respect to real-time information overlaid to the flight plan. Included are forecasts for winds aloft, clear air turbulence, thunderstorm tops and icing along with airport observational weather and forecast, lightning, ground weather radar and more. These services not only help pilots and flight crews improve safety and efficiency – the data can assist flight operation managers to better manage fleet trajectory and lock in schedules.

GoDirect Flight Efficiency

Honeywell’s GoDirect Flight Efficiency software analyzes data and provides reports that empower operators to optimize fuel efficiency across Flight Operations, Ground Operations and Maintenance. Pilots are provided the most fuel-efficient flight paths that will reduce the amount of fuel used on every flight. Airlines can easily integrate the software into their current technologies to immediately benefit from customized reports based on individual needs, reducing fuel costs by up to 5% and ensure schedule integrity. Fuel use can account for 20 to 40 percent of an airline’s operating costs, so even single-digit percentage improvements can save airlines tens of millions of dollars in fuel spending each year.

GoDirect Ground

GoDirect Ground is designed to help you manage the ground handling process effectively and efficiently. It is intuitive and user friendly, with simple-to-use screens and graphical prompts. The service assists the ground handler in managing the aircraft turnaround process, while providing accurate, real-time information to operations on the status of each tail and the likelihood of it pushing back on time. The service improves on time performance, resource planning and utilization, and invoicing accuracy.
GoDirect Weather
Our suite of weather related solutions including the Connected Radar and GoDirect Weather enable flight crews to view, track and share weather data in real-time. This improves strategic maneuvering, thus reducing flight times and optimizing route miles ahead of bad weather.

Flight Management System
The Connected Flight Management System will provide pilots with access to updated and customized wind and temperature information throughout all phases of the flight. This will help optimize the vertical profile of a flight, thus improving fuel efficiency and reducing emissions.

Applications
Applications such as GoDirect Flight Preview, with its unique 3-D animated view increases a pilot’s situational awareness around their destination airport and allows them to prepare visually and mentally for an approach like never before – making aviation safer.

Aircraft Data Gateway
Aircraft Data Gateway is a 3-in-1 integrated solution for wireless data transfer. Instead of multiple data loading or interface units, the single unit and keeps information secure with encryption, transmission and monitoring built in. The solution enables integration with electronic flight bags and pilot tablets; remote send pilot maintenance manuals; remote database and Loadable Software Aircraft Part staging with proximity loading for pilot and crew to update databases anywhere and anytime.

Benefits – Pilots & Flight Crew
The Connected Aircraft will provide the flight crew with more information about the flight environment than ever before. The following are some examples of the services and applications Honeywell is developing to benefit flight crews.

GoDirect Weather
Crowd Sourcing your fleet’s weather data
Connected Weather = Real Time Weather
updates up to 300 miles ahead

Reduce Fuel Costs up to US$50,000 per aircraft per year
Fewer Bumps and fewer delays equals happier passengers

Connected FMS = Real Time Wind
and air temperature data

Air Traffic Control Priority
Saves up to 5% in flight time

Optimized Flight Profile
improved fuel efficiency and reduced emissions

Real Time Wind
and air temperature data

EFB apps such as GoDirect Flight Preview
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$50,000
Benefits – Maintainers

The Connected Aircraft will also help airlines keep their operations at optimal efficiency and their aircraft in optimal condition.

Aircraft Data Gateway
Aircraft Data Gateway now enables airline customers to reap the benefits of an affordable and flexible approach to wireless data transfer. The solution requires only one integrated unit (SDG-300) instead of multiple data loading or interface units and keeps information secure with encryption, transmission and monitoring built in. It enables Connected Aircraft solutions such as connected data loading and connected maintenance that help airlines reduce aircraft-on-ground time and costs.

GoDirect Connected Maintenance
By wirelessly connecting more mechanical systems, we are able to drive improved predictive analysis. This allows ground crews to identify components that will require maintenance or replacement before the aircraft lands — and ensure spare parts are available, if needed, ready for installation when it does. For example, capturing and analyzing aircraft data on usage and wear enables auxiliary power units, wheels and brakes, and environmental control systems to be more efficiently inspected, undergo more rapid and streamlined maintenance processes, and realize lower costs.

Honeywell is Uniquely Positioned
- extensive product portfolio and expertise

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<tr>
<th>Benefit</th>
<th>Amount</th>
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<tr>
<td>Up to 35% Reduction in inoperative equipment</td>
<td>$30,000</td>
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<tr>
<td>Annual Service Savings</td>
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<tr>
<td>10% and up to US$30,000 on Honeywell products</td>
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<tr>
<td>Better Predictive Analysis</td>
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<td>US$35,000 Savings in maintenance costs</td>
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<td>related to weather thanks to Connected Weather Solutions</td>
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<td>Cuts Troubleshooting Time by up to 25%</td>
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* Included in savings outlined in Pilots & Flight Crew Benefits
Benefits – Passengers

The Connected Aircraft will bring significant benefits to the passenger as well. With shorter flights, more punctual departures, enhanced in-flight entertainment, connectivity and productivity as well as fewer in-flight bumps, all contributing to an improved passenger experience.

JetWave™
Honeywell’s JetWave™ system exclusively powers Inmarsat’s GX Aviation global high-speed Ka-band service. Designed to deliver ‘home equivalent’ connectivity, Honeywell can help airlines provide a consistently outstanding passenger experience all over the world.

Connected Weather
Through our Connected Weather solutions the flight crew can identify and avoid hazardous weather – making flights and the passenger experience smoother and safer.

GoDirect Connected Maintenance
Connected Maintenance solutions help keep an airline’s operations efficient – improving on-time performance and reducing delays. Passengers will be able to complete their journeys on-time as scheduled.

Home Equivalent Connectivity
JetWave & GX Aviation delivers 10-100 times faster inflight Wi-Fi than other existing global networks
Office Equivalent Productivity and ‘home equivalent’ connectivity at 35,000ft – anywhere/anytime

Smother & Safer Passenger Experience
Connected Maintenance reduces aircraft ground time and improves On-time Performance
Connected Weather Solutions means fewer in-flight bumps for smoother passenger experiences
Honeywell Connected Aircraft Offerings:

**Data Management**
GoDirect Connected Loading
GoDirect Flight Databases

**GoDirect™ Flight Support Services**
GoDirect Flight Efficiency
GoDirect Flight Optimization
  GoDirect Weather
  GoDirect Datalink
  GoDirect Flight Preview

**GoDirect Cabin Connectivity Services**
GoDirect Toolkit

**GoDirect Ground Handling Services**

**Connectivity Equipment**
Cabin Satcom Systems – JetWave™
Cockpit Satcom Systems for L-band and Iridium
  Network Routing
  Antennas
  Recorders Transmitters
  Aircraft Data Gateway

**GoDirect Maintenance Services**
GoDirect Connected Maintenance
  *(for APU, wheels & brakes, and environmental control systems)*
  GoDirect Competent Solutions
  Software & Data Analysis Services
  Maintenance Service Agreement Program
  GoDirect Maintenance Analyzer

Want to know what the Connected Aircraft can do for you and your operations? Visit honeywellconnectedaircraft.com to learn more!
Honeywell Aerospace

Honeywell Aerospace is a global leader of integrated avionics, engines, surface systems and service solutions for aircraft manufacturers, airlines, business and general aviation, military, space and airport operations. We give you the power to protect and the technology to perform – even in the most challenging environments – while optimizing energy efficiency and product lifespan and increasing the productivity of critical assets in order to minimize maintenance costs.

All estimates on performance, operational benefits and cost savings provided within this document are based on Honeywell data.